Trend Study 28R-7-01

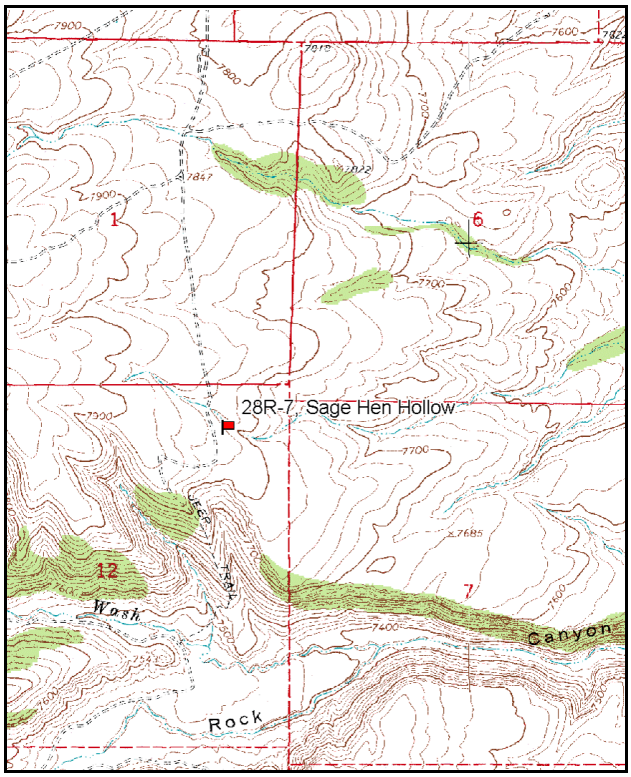
Study site name: Sage Hen Hollow . Vegetation type: Black Sagebrush .

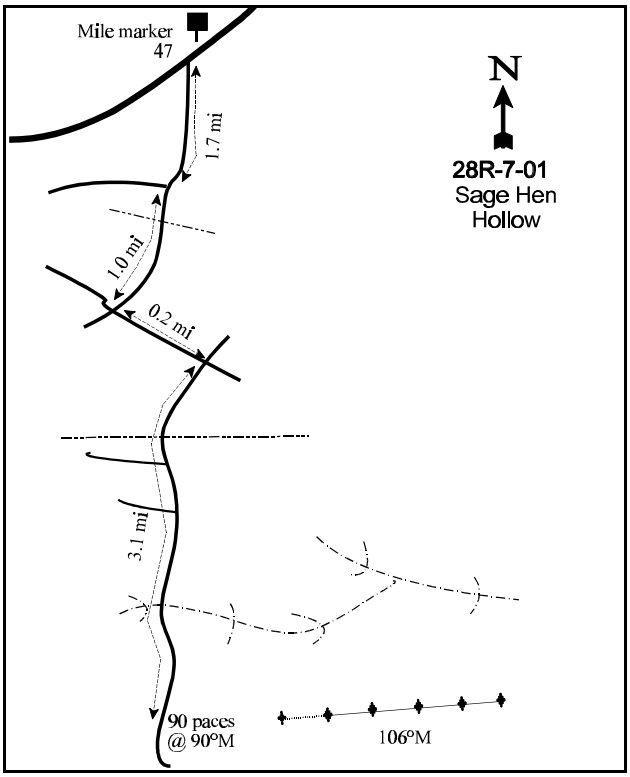
Compass bearing: frequency baseline 106 degrees magnetic.

Frequency belt placement: line 1(11ft), line 2(34 ft), line 3(59 ft), line 4(71 ft), line 5 (95 ft).

LOCATION DESCRIPTION

From Panguitch travel south towards Panguitch Lake on Highway 143. Turn left 0.1 miles past mile marker 47. Travel 1.7 miles staying left and go another 1.0 mile. Turn left and go 0.2 miles. Turn right and travel 3.1 miles on a rocky two track road, staying left at intersections. The 0-foot stake is 20 paces east of the road at 90 degrees magnetic. The baseline runs at 106 degrees magnetic.





Map Name: Hatch

Diagrammatic Sketch

Township 36S , Range 6W , Section 12

UTM 4173415 N 370346 E

DISCUSSION

Trend Study No. 28R-7

The Sage Hen Hollow study is located about 8 miles south of Panguitch. The study was established in 2000 due to concern that elk were overusing the site. The study lies on a small ridge that runs east-west at an elevation of 7,600 feet. Slope on the site varies from 4-15%. Aspect is to the northeast. The study is dominated by black sagebrush with lesser amounts of mountain big sagebrush and bitterbrush. A pellet group transect read in 2000 estimated light use by all animals. The transect estimated 11 deer days use/acre (27 ddu/ha), 5 elk days use/acre (12 edu/ha), and less than 1 cow day use/acre (2 cdu/ha). Pellet group transect data taken in 2001 estimated 24 deer days use/acre (60 ddu/ha), 11 elk days use/acre (27 edu/ha), and less than 1 cow day use/acre (2 cdu/ha). Grouse pellets were also sampled in both 2000 and 2001.

Soils are loamy in texture and shallow due to the abundance of rock within the profile. Effective rooting depth was estimated at just over 9 inches. Soils are slightly acidic in reactivity (6.4 pH). Organic matter is good at over 3%. Vegetation and litter cover are abundant, although most of the vegetation cover comes from shrubs. Shrubs provide less protection against erosion compared to herbaceous vegetation. Erosion appeared to be minimal in both 2000 and 2001.

The browse component consists of a variety of species. Black sagebrush is the dominant species, with mountain big sagebrush and bitterbrush providing lesser amounts of palatable forage. Black sagebrush had an estimated density of nearly 16,000 plants/acre in 2001. Percent decadence is moderate at 38% and 34% in 2000 and 2001 respectively. The proportion of the population displaying poor vigor ranges from 12-17%. Utilization on black sage was light during both readings. Annual leader growth for black sagebrush averaged less than 1 inch in 2001.

In 2001, mountain big sagebrush had an estimated density of 1,180 plants/acre. Percent decadence is very high in 2001 at 63%, an increase from 44% in 2000. However, the proportion of the population displaying poor vigor decreased from 49% in 2000 to 17% in 2001. Use is light and recruitment is low with only 20 young plants/acre being estimated in 2001. Annual leader growth for mountain big sagebrush averaged about 1½ inches in 2001. Bitterbrush had an estimated density of 320 plants/acre in 2000, increasing to 440 plants/acre in 2001. The increase is due to the emergence of young plants in the population (80 plants/acre). Use on bitterbrush has been mostly light, while vigor has been normal for the most part. Bitterbrush rarely has the level of light use seen on this site, especially on big game winter ranges. Annual leader growth for bitterbrush averaged less than 2 inches in 2001. High decadency and poor vigor in the mountain big sagebrush population is mostly from high competition with an overly abundant black sagebrush population. Furthermore, this site is already marginal for mountain big sagebrush and bitterbrush due to the shallow, rocky soils where black sagebrush excels.

Pinyon and juniper trees are slowly encroaching onto the site. Point-quarter data taken in 2000 estimated 109 pinyon trees/acre and 6 juniper trees/acre.

The herbaceous understory is sparse for a site at this elevation. In 2001, grasses provided only 7% average cover while forbs contributed to less than 1% cover. Mutton bluegrass is the most abundant herbaceous species. Bottlebrush squirreltail, needle-and-thread, and blue grama were also sampled. Due to the abundance of black sagebrush and the typically low site potential of most black sagebrush sites, herbaceous species will likely be limited.

2001 TREND ASSESSMENT

Trend for soil is stable. Erosion appears minimal with adequate vegetation and litter cover. Abundant rock and pavement help decrease erosion as they armor the soil surface. Trend for browse is stable. Use on black sagebrush and the more preferred but less abundant species, mountain big sage and bitterbrush, is mostly light. This site is marginal for mountain big sagebrush and bitterbrush due to the shallow, rocky soils and high competition with black sagebrush. The herbaceous understory is sparse, but it has a stable trend.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable (3)

HERBACEOUS TRENDS --
Herd unit 28R, Study no: 7

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'00	'01	'00	'01	'00	'01
G	Bouteloua gracilis	33	41	11	15	.75	.87
G	Carex spp.	-	2	-	1	-	.01
G	Oryzopsis hymenoides	1	-	1	-	.00	-
G	Poa fendleriana	185	181	65	66	4.25	4.13
G	Poa secunda	39	-	16	-	.15	-
G	Sitanion hystrix	6	*63	4	27	.12	1.11
G	Stipa comata	17	34	9	12	.47	1.49
Total for Annual Grasses		0	0	0	0	0	0
Total for Perennial Grasses		281	321	106	121	5.77	7.62
Total for Grasses		281	321	106	121	5.77	7.62
F	Antennaria rosea	3	6	1	2	.15	.30
F	Aster spp.	1	-	1	-	.00	-
F	Astragalus spp.	4	-	2	-	.03	-
F	Chaenactis douglasii	1	-	1	-	.00	-
F	Cryptantha spp.	-	1	-	1	-	.00
F	Draba spp. (a)	-	12	-	4	-	.02
F	Eriogonum alatum	1	6	1	2	.03	.01
F	Erigeron eatonii	6	4	2	2	.01	.01
F	Erigeron pumilus	12	7	7	5	.03	.02
F	Eriogonum racemosum	14	8	9	4	.09	.02
F	Gayophytum ramosissimum (a)	-	*14	-	6	-	.03
F	Linum lewisii	20	*2	9	1	.07	.01
F	Lotus utahensis	1	-	1	-	.03	-
F	Lupinus argenteus	3	2	1	2	.01	.01

Type	Species	Nested Frequency '00	Nested Frequency '01	Quadrat Frequency '00	Quadrat Frequency '01	Average Cover % '00	Average Cover % '01
F	Lygodesmia spinosa	9	2	6	2	.09	.03
F	Phlox longifolia	1	*33	1	17	.00	.08
F	Polygonum douglasii (a)	-	1	-	1	-	.00
F	Senecio multilobatus	13	10	7	6	.06	.05
Total for Annual Forbs		0	27	0	11	0	0.05
Total for Perennial Forbs		89	81	49	44	0.63	0.56
Total for Forbs		89	108	49	55	0.63	0.62

* Indicates significant difference at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 28R, Study no: 7

Type	Species	Strip Frequency '00	Strip Frequency '01	Average Cover % '00	Average Cover % '01
B	Abies concolor	0	0	.38	-
B	Artemisia nova	97	99	22.71	30.79
B	Artemisia tridentata vaseyana	26	29	3.79	4.63
B	Chrysothamnus depressus	1	0	-	-
B	Chrysothamnus viscidiflorus viscidiflorus	14	15	.15	.06
B	Coryphantha vivipara	1	0	-	-
B	Gutierrezia sarothrae	1	4	.16	.00
B	Juniperus osteosperma	0	0	.38	1.25
B	Mahonia repens	3	4	.00	.01
B	Opuntia spp.	1	2	.00	-
B	Pinus edulis	6	8	1.25	1.77
B	Purshia tridentata	15	20	2.96	.68
Total for Browse		165	181	31.82	39.21

CANOPY COVER --
Herd unit 28R , Study no: 7

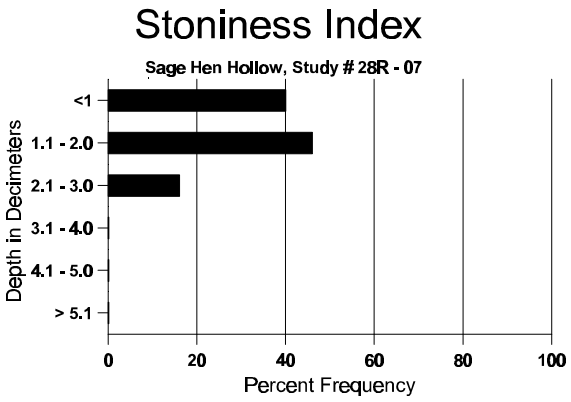
Species	Percent Cover '00	Percent Cover '01	Point-Quarter Tree Data: Trees per Acre '00	Point-Quarter Tree Data: Average diameter (in) '00
Juniperus osteosperma	-	-	6	2.7
Pinus edulis	-	1	109	0.9

BASIC COVER --
Herd unit 28R, Study no: 7

Cover Type	Nested Frequency		Average Cover %	
	'00	'01	'00	'01
Vegetation	295	340	39.36	47.79
Rock	318	286	14.98	14.64
Pavement	365	367	20.31	15.91
Litter	447	451	38.28	33.82
Cryptogams	16	-	.37	0
Bare Ground	349	338	27.82	9.68

SOIL ANALYSIS DATA --
Herd Unit 28R, Study no: 07, Sage Hen Hollow

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
9.2	54.8 (9.7)	6.4	43.9	32.8	23.3	3.1	26.0	380.8	0.8



PELLET GROUP FREQUENCY --
Herd unit 28R, Study no: 7

Type	Quadrat Frequency		Pellet Transect			
			Pellet Groups per Acre		Days Use per Acre (ha)	
	'00	'01	'00	'01	'00	'01
Rabbit	4	2	26	17	N/A	N/A
Elk	10	8	61	139	5 (12)	11 (27)
Deer	10	19	17	313	11 (28)	24 (60)
Cattle	-	-	9	9	1 (2)	1 (2)
Sage grouse	-	-	9	9	N/A	N/A

BROWSE CHARACTERISTICS --
Herd unit 28R, Study no: 7

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia nova																		
S	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	01	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
M	00	265	21	-	65	23	-	4	-	-	370	-	8	-	7560	11	19	378
	01	523	-	-	-	-	-	-	-	-	523	-	-	-	10460	10	19	523
D	00	114	16	-	64	15	-	22	-	-	138	-	3	90	4620			231
	01	267	-	-	1	-	-	-	-	-	170	-	-	98	5360			268
X	00	-	-	-	-	-	-	-	-	-	-	-	-	-	720			36
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	1440			72

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'00	12%	00%	17%	+23%
'01	00%	00%	12%	

Total Plants/Acre (excluding Dead & Seedlings)				
'00	12220	Dec:		38%
'01	15960			34%

Artemisia tridentata vaseyana																		
Y	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	00	16	3	-	5	1	-	-	-	-	18	-	7	-	500	17	24	25
	01	19	1	-	-	-	-	1	-	-	21	-	-	-	420	18	22	21
D	00	11	7	-	2	-	-	-	-	-	5	-	5	10	400			20
	01	34	1	-	2	-	-	-	-	-	27	-	-	10	740			37
X	00	-	-	-	-	-	-	-	-	-	-	-	-	-	380			19
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	260			13

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'00	24%	00%	49%	+24%
'01	03%	00%	17%	

Total Plants/Acre (excluding Dead & Seedlings)				
'00	900	Dec:		44%
'01	1180			63%

Chrysothamnus depressus																		
M	00	-	-	-	1	-	-	-	-	-	1	-	-	-	20	-	-	1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'00	00%	00%	00%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'00	20	Dec:		-
'01	0			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus viscidiflorus																		
Y	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	00	8	-	-	3	1	-	1	-	-	13	-	-	-	260	4	8	13
	01	14	-	-	-	-	-	1	-	-	15	-	-	-	300	7	11	15
D	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'00	06%	00%	00%	+ 0%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'00	320	Dec:		6%
'01	320			0%

Coryphantha vivipara																		
M	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	1	2	1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'00	00%	00%	00%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'00	20	Dec:	-
'01	0		-

Gutierrezia sarothrae																		
M	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	3	5	1
	01	7	-	-	-	-	-	-	-	-	7	-	-	-	140	6	6	7
D	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'00	00%	00%	00%	+88%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'00	20	Dec:	0%
'01	160		13%

Mahonia repens																		
Y	00	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	00	3	-	-	3	-	-	-	-	-	6	-	-	-	120	3	5	6
	01	6	-	-	-	-	-	1	-	-	7	-	-	-	140	3	4	7

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'00	00%	00%	00%	+ 0%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'00	140	Dec:	-
'01	140		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia spp.																		
M	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	5	13	1
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20	4	11	1
D	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'00	00%	00%	00%	+50%
'01	00%	00%	50%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
'00	20		0%
'01	40		50%

Pinus edulis																		
S	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	01	1	-	-	1	-	-	-	-	-	2	-	-	-	40			2
Y	00	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
	01	5	-	-	1	-	-	-	-	-	6	-	-	-	120			6
M	00	-	-	-	-	-	-	-	2	-	2	-	-	-	40	-	-	2
	01	1	-	-	-	-	-	1	-	-	2	-	-	-	40	-	-	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'00	00%	00%	00%	+25%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
'00	120		-
'01	160		-

Purshia tridentata																		
Y	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	2	-	-	2	-	-	-	-	-	4	-	-	-	80			4
M	00	3	2	-	5	3	-	2	-	-	14	-	1	-	300	31	54	15
	01	10	4	-	3	1	-	-	-	-	18	-	-	-	360	29	52	18
D	00	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'00	31%	00%	06%	+27%
'01	23%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
'00	320		6%
'01	440		0%